[redacted]

18 **UNIVATION TECHNOLOGIES** REFERENCE: ______

SUBJECT: [redacted] DATA BY: [signature]

DATE: [redacted] PROJECT NO.: SUPERVISED BY:

LCM Compounding: Sample 1163-78-1BK { 0.1 % Irganox 1010 ; 0.1 % Irgafos 168 ; 0.05 % Ca St ; 6.5 % 0092 Master }

Compounded approximately 20,000 lb.

Granular feedstock: { DBX-4606 H ; Part 1 Bin 853 ; 2/15/07 }

One gaylord compounded natural on ZSK-40 1163-R-1

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Col_nnb	[illegible]	[illegible]	[illegible]	[illegible]	CC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]			[illegible]	2	[illegible]	[illegible]	185	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	100	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8	[illegible]	[illegible]	126	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			

[illegible]	[illegible]	Date	sampleID	Mn_L	Mw_L	DI_L	Mn_H	Mw_H	DI_H	split	spread	Mn	Mw	Mz	Mz+1	DI
1163-18-377	[illegible]	[illegible]	660373	6,306	24,337	3.9	116,494	540,914	4.7	52.5	22.6	13,541	312,298	1,850,296	4,260,275	23.4
1163-18-405	[illegible]	[illegible]	665466	8,385	25,466	3.0	125,532	564,430	4.5	51.8	22.3	15,319	303,816	1,576,918	3,965,115	19.8

S-4 Rapid Crack Propagation Testing

250 MM Pipe S-4 Test - [redacted] Report No. 8262
Pc > 10 bars critical pressure tested at 0°C

4 inch SDR 11 Pipe S-4 Test - [redacted] Project 07-3679 Final Report
Tc = -13°C
Critical temperature Tc tested at pressure of 5 bars

Notched Pipe Slow Crack Growth
Per ISO 13479 80°C/9.2 bars
Jana Labs Report 07-3701
mean failure time: 3,672 hrs

Table 2: Summary of Notched Pipe Test Results

Specimen ID	Client Sample ID	Test Time (hours)	Average Test Time* (hours)	Status	ISO 13479:1997(E) Requirement (Minimum Failure Time 165 hr)
07-1085-01	18-1	4,001	3,672 ± 338	SR Failure	Pass
07-1085-02		3,687		SR Failure	Pass
07-1085-03		3,330		SR Failure	Pass

* Arithmetic Average result ± 1 standard deviation

WITNESSED AND UNDERSTOOD BY ______ DATE ______

Attachment 2

notebook	descrip	Date	sampleID	Catalyst	Cat_ratio	Reactor	comon	T rx	H2	C6	compounder	density	I21	I5
1163-18-1	[redacted]			[redacted]	3	[redacted]	c6	105	0.0021	0.004	ZSK-40	0.9494	5.26	0.13333
1163-18-356A	[redacted]	[redacted]	603356	[redacted]	3	[redacted]	c6	105	0.0021	0.004	Brabender	0.9497	5.18	0.133
1163-18-387A	[redacted]	[redacted]	603387	[redacted]	3	[redacted]	c6	105	0.0021	0.004	Brabender	0.9496	5.63	0.144
1163-18-433A	[redacted]	[redacted]	603433	[redacted]	3	[redacted]	c6	105	0.0021	0.004	Brabender	0.9504	6.31	0.159
1163-18-447A	[redacted]	[redacted]	603447	[redacted]	3	[redacted]	c6	105	0.0021	0.004	Brabender	0.9500	5.94	0.147

notebook	I2	MFR2	MFR5	Al_icp	Zr_icp	Si_icp	bbf_nmr	TnslYld_psi	Tens Brk psi	Tens_ MPa	brk Mpa	Elong_ pct	FAR	Tm DSC
1163-18-1	0.028585	184	39.5	26.4	1.08	35.0	0.88	3384	4679	23.3	32.3	646	+30	133.1
1163-18-356A	0.028	185	38.9				1.16	3330	4097	23.0	28.2	587		
1163-18-387A	0.030	188	39.1					3437	4248	23.7	29.3	625		133.1
1163-18-433A	0.032	195	39.7				1.70	3441	3973	23.7	27.4	609		
1163-18-447A	0.030	197	40.5					3418	3780	23.6	26.1	580		

notebook	descrip	Date	sampleID	Mn_L	Mw_L	DI_L	Mn_H	Mw_H	DI_H
1163-18-377	[redacted]	[redacted]	603377	6,204	24,357	3.9	116,494	549,914	4.7
1163-18-408	[redacted]	[redacted]	603408	8,385	25,466	3.0	125,552	564,430	4.5

notebook	split	spread	Mn	Mw	Mz	Mz+1	DI
1163-18-377	52.5	22.6	13,341	312,290	1,850,896	4,260,273	23.4
1163-18-408	51.0	22.2	15,319	303,816	1,574,918	2,965,115	19.8